Rodrigo AGUILERA, Ph.D.
11692 Chenault St # 301, Los Angeles, CA 90049. Email: raguilera@hei.org. Phone: 310-471-2058

AREAS OF EXPERTISE

- Chromatography and Mass Spectrometry includes MALDI-TOF, LC/MS/MS, GC/C/IRMS, GC/MS
- Proteins Identification and Characterization Including Membrane Proteins
- Analysis of Biological Samples Including Identification and Quantification Assays
- Analytical Method Development and Validation for Small Molecules
- Steroids and Metabolism/Anti-Doping Issues
- Laboratory Management

EDUCATION

1996 **Ph.D. in Analytical Chemistry** University of Lyon-CNRS–France.

Dissertation Title: "*Differentiation between endogenous and exogenous testosterone by carbon isotope ratio mass spectrometry*"

1992 **Master in Chemistry** University of Lyon–France.

1991 **Bachelor in Chemistry** University of Lyon–France.

PROFESSIONAL HISTORY

2007- to present **Researcher Scientist.** House Ear Institute, Proteomics Core Facility, Los Angeles, California, U.S.A.

- Responsible for designing and setting up the HEI Proteomics Core Facility
- Managing laboratory personnel and balancing and overseeing the budget
- Maintaining and repairing analytical instrument: Ion Trap, Triple Quadrupole, MDLC systems
- Developing strategies for protein identification and PTM studies for proteomic analysis
- Conducting proteomic analyses for various proteins
- Developing and validating Bioanalytical assay methods using LC/MS/MS

2003- 2006 **Associate Director.** USC School of Pharmacy, Department of Research, Proteomics Core Facility, Los Angeles, California, U.S.A.

- Responsible for designing and setting up the USC Proteomics Core Facility
- Managing laboratory personnel and balancing and overseeing the budget
- Maintaining and repairing analytical instrument: Ion Trap, Triple Quadrupole, MALDI-TOF, MDLC systems
- Developing strategies for protein identification and PTM studies for proteomic analysis
- Conducting proteomic analyses for various proteins
- Developing and validating bioanalytical assay methods using LC/MS/MS

2002-2003 **Researcher Scientist.** UCLA School of Medicine, Department of Psychiatry, Mass Spectrometry Laboratory. Los Angeles, California, U.S.A.

- Responsible for an U.S. Department of Energy funded project investigating the proteomics of a blue-green alga. This project included analysis of intact proteins of integral membrane proteins and soluble proteins using mass spectrometry. The project also included development of two dimensional chromatographic separation technologies and 2D gel electrophoresis
- Responsible for the proteomics samples analyses for collaborative projects on the UCLA campus
- Responsible for instrumentation maintenance of Ion Trap and MALDI-TOF

1997-2002 **Researcher Scientist.** UCLA School of Medicine. Pharmacology Department**.** Olympic Analytical Laboratory. Los Angeles, California, U.S.A.

- Responsible for developing and validating analytical methods to improve the detection methods for athletic steroid misuse
- Responsible for conducting steroid analysis in urine using the isotope ratio mass spectrometry
- Responsible for laboratories accreditation and conducting sample analyses for Olympics as well as other international and national sports competitions

1996-1997 **Researcher Scientist.** CNRS (National Research Institute). Mass Spectrometry Department. Chemistry-Biology, Lyon-France.

- Responsible for developing, improving and validating analytical method for steroids using isotope ratio mass spectrometry

LANGUAGE PROFICIENCY (Fluent)

English, French, Spanish.

AD-HOC REVIEWS FOR SCIENTIFIC JOURNALS SINCE 1997

Clinical Chemistry
Journal of Chromatography
Rapid Communications in Mass Spectrometry
Proteomics

AD-HOC REVIEWER FOR GRANT PROPOSALS

World Anti-Doping Agency, International Olympic Committee
United States Anti-Doping Agency, United States Olympic Committee

HONORS

Developed of two screening and one confirmation method for endogenous steroids testing. These three developed methods are currently used as the International Olympics Committee Official Methods for testing endogenous steroids in urine since 1998 Nagano Olympics Games.

REFERENCES

Dr. Michel Becchi **Institut de Biologie et Chimie des Protéines**
7 Passage du Vercors
69367 LYON CEDEX 07, FRANCE
Tel. : +33 472 7226 93
Fax : +33 472 7226 04
e-mail: m.becchi@ibcp.fr

Dr. Julian Whitelegge **Mass Spectrometry Laboratory**
University of California, Los Angeles,
405 Hilgard Avenue, Los Angeles, CA 90095 USA
Tel. 310 794 5156
Fax. 310 206 2161
e-mail: jpw@chem.ucla.edu

Dr. Tom Chapman **BioScreen Testing Services Inc.**
Director Pharmaceutical Services
3904 Del Amo Blvd., Suite # 801Torrance, CA 90503, USA
Tel: (310) 214-0043
Fax: (310) 370-3642
e-mail:TChapman@bioscreen.com

PUBLICATIONS IN REFEREED JOURNALS

2007 **"Lectin binding to biofilms formed by non-typeable Hemophilus influenzae"**
S Wu, T. K. Gallaher, P. Webster, **R. Aguilera**
Paper in preparation

2006 **"Nontypeable Haemophilus Influenzae Biofilm Proteins"**
T. K. Gallaher, S Wu, P. Webster, **R. Aguilera**
BMC Microbiol. 2006 Jul 19;6:65.

2006 **"Association of MBP peptides with Hsp70 in normal appearing human white matter"**
B. Lund, Y. Chakryan, N. Ashikian, L. Mnatsakanyan, C.J. Bevan, **R. Aguilera** , T. Gallaher, M. Jakowec.
J Neurol Sci. 2006 Jul 12

2005 **"Protein Modification of Aconitase Driven by Peroxynitrite and S-Glutathionylation"**
D. Han, R. Canali, J. Garcia, **R. Aguilera**, T. Gallaher and E. Cadenas
Biochemistry 2005, 44, 11986-11996

2005 **"Purification and proteomic analysis of outer membrane vesicles from a clinical isolate of *Leptospira interrogans* serovar Copenhageni"**
J. Nally, J. Whitelegge, **R.Aguilera,** M. Pereira, D. Blanco, M. Lovett.
Proteomics 2005, 5, 144-152

2004 **"Antigenic Composition of Borrelia burgdorferi during Infection In Rabbit Skin: A Temporal Analysis"**
T. Crother, Ch. Champion, J.Whitelegge, **R. Aguilera**, X.-Yang Wu, D Blanco, J. Miller, M. Lovett. *Infection and Immunity 2004, 74, 5063-5072*

2004 "**Subtle modification of isotope ratio proteomics (SMIRP); a new strategy for expression proteomics"**
J.P. Whitelegge, J.Katz, K.Pihakari, R.Hale, **R.Aguilera**, S. M. Gómez, K. F. Faull1, D.Vavilin, W.Vermaas
Phytochemistry 65 (2004) 1507–1515

2003 **"Intact mass proteomics of biological membranes"**
J. Whitelegge, **R. Aguilera**, A.Dooley, S. Gomez, J.Nally, M.Lovett, W. Vermaas, K Faull
Molecular & Cellular Proteomics. 2(7 Supplement). July 2003. S38.

2003 **"Transit peptide cleavage sites of integral thylakoid membrane proteins"**
S. Gomez, K. Y. Bil, **R. Aguilera**, J. N. Nishio, K. Faull and J.P. Whitelegge
Molecular & Cellular Proteomics. 2(10). October 2003. 1068-1085

2002 **"Full subunit coverage liquid chromatography electrospray-ionization mass spectrometry (LCMS+) of an Oligomeric Membrane Protein Complex: Cytochrome b6f Complex from Spinach and the Cyanobacterium, M. laminosus"**
J. Whitelegge, **R. Aguilera**, H. Zhang, R. Taylor, W.A Cramer.
Mol. Cell. Proteomics 2002 1: 816-827.

2002 **"Identification of proteins and intact mass measurements in proteomics"**
J. Whitelegge, S. Gomez, **R. Aguilera** et al**.**
Applied Genomics and Proteomics 2002:1 (2) 13-22

2002 **"Detection of doping with epitestosterone by isotope ratio mass spectrometry"**
R. Aguilera, C. Hatton and D. Catlin
Clinical Chemistry 2002; 48:4 629-636

2001 **"Performance characteristics of a carbon isotope ratio method for detecting doping with testosterone based on urine diols: healthy male controls and athletes with elevated testosterone/epitestosterone ratios"**
R. Aguilera, T. Chapman, B. Starcevic, C.K. Hatton and D.H. Catlin.
Clinical Chemistry 2001; 47: 292.

2000 **"A rapid screening assay for measuring urinary androsterone and etiocholanolone $\delta\ ^{13}C$ values by GC/C/IRMS"**
R. Aguilera, T. Chapman and D.H. Catlin
Rapid communications in Mass Spectrometry, Vol 14, (2000) 2294-2299.

1999 **"Screening urine for exogenous testosterone by isotope mass spectrometry analysis of one pregnanediol and two androstanediols"**
R. Aguilera, D. Catlin, M. Becchi, A. Phillips, C. Wang, R. Swerdloff, H.G. Pope, C.K. Hatton.
Journal of Chromatography B, Vol. 727 (1999) 95-105

1997 **"Control of exogenous hydrocortisone in horse urine by carbon isotope ratio mass spectrometry"**
R. Aguilera, M. Becchi, L. Mateus, M.A. Popot, H. Casabianca, C.K. Hatton
Journal of Chromatography B-Vol. 702,85-91(1997)

1996 **"Detection of testosterone misuse: Comparison of two chromatographic sample preparation methods for GC/C/IRMS analysis"**
R. Aguilera, M. Becchi, C. Grenot, H. Casabianca, C.K. Hatton
Journal of Chromatography B-Vol. 687,43-53(1996)

1996 **"Improved method of detection of testosterone abuse by gas chromatography-combustion-isotope ratio mass spectrometry analysis of urinary steroids"**
R. Aguilera, M. Becchi, H. Casabianca, C. Hatton, D.H.Catlin, H.G.Pope
Journal of Mass Spectrometry-Vol. 31, 169-176(1996)

1994 **"GC-C-IRMS analysis of urinary steroids to detect the misuse of testosterone in sport"**
M. Becchi, **R. Aguilera**, Y.Farizon, M.M. Flament, H.Casabianca, P. James
Rapid communications in Mass Spectrometry - Vol 8, 304-308 (1994)

POSTER PRESENTATIONS

2006 **"Protein expression profile of Oxaliplatin-resistant HT29 colon cancer cells"**
E. Martinez, C. Plasencia, A. Martinez, R. Aguilera, N. Neamati, A. Abad
AACR Conference, Washington DC, USA

2005 **"Identification of Biofilm Proteins in Haemophilus Influenze"**
T. Gallaher, S. Wu, P. Webster, R. Aguilera
ASMS Conference, San Antonio, USA.

2005 **"Studies of utility of subtle modification of isotope ratio profiling (SMIRP) on in-vivo organisms"**
J.Katz, J.Hau, C.A. Tindell, **R.Aguilera,** D.B. Agus; J. Whitelegge,
ASMS Conference, San Antonio, USA.

2004 **"Can Isotope Ratio be Reliably Measured From Peptide Isotope Distributions for Stable-Isotope Coding In Proteomic?**
J. P Whitelegge and **R. Aguilera**
ASMS Conference, Nashville, USA.

2003 **"Top-down Analysis of Membrane Proteins by Fourier-transform Mass Spectrometry"**
J. P. Whitelegge, K. Pihakari, **R. Aguilera**, K. Conklin, K.F. Faull
ASMS Conference. Montreal, Canada.

2003 **"Two-dimensional Liquid Chromatography for Integral Membrane Proteomics"**
R. Aguilera, S.Gomez, W. Vermaas, K.Faull, J.Whitelegge
ASMS Conference. Montreal, Canada

2003 "**Characterization of Proteins from Outer Membrane Vesicles of *Leptospira interrogans* by Mass Spectrometry"**
J. E. Nally, J.P. Whitelegge, **R. Aguilera**, E.Chow, M.M. Pereira, D. Blanco, J. N. Miller and M. A. Lovett.
ASM general meeting, Washington D.C., U.S.A.

2003 **"Proteomics of Synechocystis Sp. PCC 6803 Plasma and Thylakoid Membranes"**
J. Whitelegge, **R. Aguilera**, K. Faull, R.Roberson, W. Vermaas
ASM general meeting, Washington D.C., U.S.A.

2002 **"Mass spectrometry of intact proteins defines the A and B subunits of PS1 for intact-mass proteomics of Synechocystis sp. PCC6803".**
J.P. Whitelegge, **R. Aguilera**, S.Gómez, K. Faull, R. Roberson, W. Vermaas.
Gordon Research Conference - Photosynthesis, Bristol, Rhode Island.

2002 "**Comparative proteomics of Synechocystis sp. PCC 6803 electron transport chain mutants"**
J. Whitelegge, **R. Aguilera**, S.Gómez, K. Faull, R.Roberson, F. Vermaas.
NEDO-*DOE US- Japan.*

2002 **"Full subunit coverage ESI-MS of highly active oligomeric Cytochrome b6 complex by liquid chromatography mass spectrometry with fraction collection (LC-MS+)"**
W. Cramer, H Zhang, R. Taylor, **R. Aguilera**, K. Faull, J. Whitelegge.
ASMS Conference. Orlando, USA.

2002 **"FT-ICR Mass Spectrometry of Intrinsic Membrane Proteins; Bacteriorhodopsin"**
J. Whitelegge, K. Conklin, **R. Aguilera**, A. Fountain, K. Faull
ASMS Conference. Orlando, USA

2001 "**A confirmatory method to detect exogenous epitestosterone administration in urine by gas chromatography/combustion/isotope ratio mass spectrometry"**
Rodrigo Aguilera
ASMS Conference. Chicago, USA

2000 **"Fast screening method for the detection of exogenous anabolic steroids in urine by GC/C/IRMS"**
R. Aguilera, D. Catlin and T. Chapman
ASMS Conference. Long Beach, USA.

1997 **"Detection of exogenous hydrocortisone in horse urine by gas chromatography/combustion/carbon isotope ratio mass spectrometry"**
R.Aguilera, M.Becchi, L.Mateus, M.A.Popot, Y.Bonnaire,H. Casabianca, C.K.Hatton
14th International Mass Spectrometry Conference. Tampere, Finland.

1997 **"Analyze isotopique de stéroïdes. Application au contrôle antidopage"**
M. Becchi and **R. Aguilera**
14èmes Journées Françaises de Spectrométrie de Masse, *Lille, France.*

1996 **"Improved method of detection of testosterone abuse by gas chromatography-combustion-isotope ratio mass spectrometry analysis of urinary steroids"**
R. Aguilera, M. Becchi, H. Casabianca , C.Hatton, D. Catlin,
B. Starcevic, HG. Pope,
14th Cologne Workshop on Dope Analysis, Cologne, Germany.

1994 **"Gas chromatography/combustion/Isotope-ratio mass spectrometry analysis of urinary steroids to detect misuse of testosterone in sport"**
M. Becchi, **R. Aguilera**, M.M. Flament, H. Casabianca
S.F.C. Mass Spectrometry Congress 20-22, Rouen, France.

ORAL PRESENTATIONS

2005 ***Guest Speaker:***
Mass Spectrometry: As a Powerful Analytical Technique for Proteomics applications"
The House Ear Institute, Los Angeles, USA

2005 ***Guest Speaker***
"Isotope Ratio Mass Spectrometry: New Applications to detect steroids misuse in Sports "
University of Chile, Santiago, Chile

2004 ***Guest Speaker***
"Subtle modification of Isotope Ratio Proteomics (SMIRP); A New Strategy for Expression Proteomics"
Proteomics: New Insights and Prospects Meeting, Lyon, France

2004 ***Guest Speaker***
"Subtle modification of Isotope Ratio Proteomics (SMIRP); A New Strategy for Expression Proteomics"
Proteomic Group, UCLA, USA

2003 **"Comparative proteomics of Synechocystis Sp PCC 6803: Membrane Proteins"**
R. Aguilera, A. Dooley, W. Vermaas, K. F. Faull, J.P. Whitelegge
Mass Spectrometry and Proteomics Analysis Conference, Toulouse, France

2003 ***Invitation***
"Application of Gas Chromatography-Combustion-Isotope Ratio Mass Spectrometry to Doping Control"
2nd Annual USADA Symposium on anti-Doping Science, Los Angeles, USA

2002 ***Guest Speaker:***
"Isotope Ratio Mass Spectrometry and Anti-doping Control Applications"
Mass Spectrometry Laboratory, UCLA, USA

2001 ***Invitation***
"Isotope Ratio Mass Spectrometry: New Applications to detect steroids misuse in Sports "
Anti-Doping Laboratory, University of Roma, Italy

2001 ***Invitation***
“Isotope Ratio Mass Spectrometry: New Applications to detect steroids misuse in Sports “
Federazione Medico Sportiva Italiana, Milan, Italy

2001 **“A confirmatory method to detect epitestosterone administration in urine by GC/C/IRMS“**
University of Alberta, September, Calgary, Canada

2001 ***Invitation***
“A confirmatory method to detect epitestosterone administration in urine by GC/C/IRMS”
Laboratory Anti-Doping, September, Bogotá, Colombia

1997 ***Invitation:***
“Detection of Testosterone Doping by Carbon Isotope Ratio”
R. Aguilera, M. Becchi, D.H. Catlin, C.K. Hatton, B. Starcevic, HG. Pope
15th Cologne Workshop on Dope Analysis,Cologne, Germany.

1997 **“Carbon Isotope Ratio studies of urinary Steroids. Applications to Testosterone Doping Control”**
M. Becchi, **R. Aguilera**
*Advances in Dope Testing Research**,** IOC MEDICAL COMMISSION, Lausanne, Switzerland*

1996 **“Detection of testosterone abuse”**
R. Aguilera, M. Becchi, H. Casabianca, M.M. Flament
Journées Centre Est de la S.F.C. Lyon, France

1994 **“Gas chromatography/combustion/Isotope-ratio mass spectrometry analysis of urinary steroids to detect misuse of testosterone in sport”**
M. Becchi, **R. Aguilera**, M.M. Flament, H. Casabianca
S.F.C. Mass Spectrometry Congress, Rouen, France